## Plant histology

The third edition of CHAMBERLAIN'S[6] *Methods in plant histology* has been entirely rewritten, and so much new matter both in text and illustrations added that it is essentially a new book. A chapter on the making of photomicrographs and lantern slides has been added, and the directions are so lucid and complete that anyone should be able to do good work, even with inexpensive and improvised apparatus.

Perhaps in no field of microtechnique has the advance been greater than in the paraffin method during the past ten years. The later methods are fully set forth. The chapter on special methods has been much enlarged and brought up to date. Many of the time-honored formulae and methods have disappeared; only those which have stood the most rigid tests have survived in the third edition. Many new methods and formulae are presented for the first time.

Much attention has been given to collecting and keeping material alive in the laboratory. The directions for collecting, killing, and fixing material for research are most thorough, for the author keenly realizes how difficult it is to get material properly prepared for critical research. His experience has been such that he knows that many otherwise competent collectors entirely fail to understand or can be made with difficulty to realize the supreme importance of properly killing, fixing, and preserving material intended for research.

Specific directions are also given for making such preparations as are needed by teachers and those who wish to get a comprehensive view of the plant kingdom from the lowest to the highest forms. The book is indispensable to those who wish to be in touch with the latest advances in modern microtechnique.—W. J. G. LAND.

## MINOR NOTICES

**Amino acids.**—UNDERHILL'S[7] little book on the physiology of amino acids is an interesting and simple general statement of the present status of our knowledge on this subject. The chapter headings give an idea of the nature and scope of the treatment of the topic. They are as follows: (1) The proteins and their derivatives, the amino acids; (2) digestion and bacterial activity in relation to the amino acids; (3) the absorption of proteins and amino acids; (4) in what forms does ingested protein enter the circulation; (5) theories of protein metabolism; (6) the further fate of amino acids; (7) the amino acids in relation to the specific dynamic action of proteins; (8) the amino acids and simpler nitrogenous compounds as foodstuffs; (9) the specific rôle of amino acids in nutrition and growth. The book is most attractively written and

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[6] CHAMBERLAIN, CHARLES J., Methods in plant histology. pp. xi+314. The University of Chicago Press. 1915.

[7] UNDERHILL, F. P., The physiology of amino acids. pp. 169. *figs.* 13. Yale University Press. 1915. $1.35.

thoroughly suited to the audience addressed. While the subject is treated entirely from the side of mammalian physiology as a basis of comparison, the book bears much of interest to plant physiologists. The limited power of mammals to manufacture amino acids, especially lysine and tryptophan, the inadequacy of certain plant proteins (zein and gliadin) as a nitrogen source for mammals because of the absence of one or both of these amino acids, and the idea that amino acids play a specific rôle in metabolism and perhaps growth, aside from their use as source of energy and building material, are all suggestive to the plant physiologist, and contrast with the situation more generally met by him.—WM. CROCKER.

**A new manual.**—PIPER and BEATTIE[8] have published a manual of the flora of the region described as "lying between the summit of the Cascade Mountains and the Pacific Ocean from the 49th parallel of latitude across the southern portion of Vancouver Island, south to the headwaters of the Willamette River." There are four life zones represented: humid transition zone, including the great forests of Douglas spruce; Canadian zone, not sharply limited; Hudsonian zone, indicated by subalpine fir, Alaska cedar, black hemlock, and white-bark pine; and arctic zone, consisting of the alpine flora above timber line. It is a most interesting floral region, not hitherto represented in a suitable manual. The material upon which the work is based is mainly to be found in the herbarium of the State College of Washington.

The usefulness of a manual can be judged only by its use; but so far as organization and appearance go, this manual promises to be all that can be desired. The size of the volume indicates a rich and varied flora, and the summary states that 1617 species and subspecies are presented, representing 550 genera and 100 families. New species are described in *Arctostaphylos*, *Godetia*, *Panicularia*, *Populus*, and *Solidago* (2), and 14 new combinations are proposed. A useful glossary and a full index complete the volume.—J. M. C.

**Botanical technique.**—The second volume of the *Praktikum* of MÖBIUS[9] deals with thallophytes, bryophytes, pteridophytes, and gymnosperms. The descriptions and directions are in general good, but the quality of the illustrations is very variable. Some are excellent, others are so faithfully drawn that the carelessness of the technician is very apparent, as shown by the figure of a cross-section of the stem of *Lycopodium complanatum*. A figure of a young antheridium of *Pellia epiphylla* shows that the illustrator did not know he was drawing from an oblique section. In any text, especially one intended for beginners, accuracy and clearness of statement should be paramount. In addition to an intimate knowledge of the subject, an author should also be

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[8] PIPER, CHARLES V., and BEATTIE, R. KENT, Flora of the northwest coast. 8vo. pp. xiii+418. Lancaster (Pa.): The New Era Printing Co. 1915. $1.75.

[9] MÖBIUS, M., Mikroskopisches Praktikum für systematische Botanik (II). 8vo. pp. v+314. *figs. 123*. Berlin: Gebrüder Borntraeger. 1915.